25X1

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1 June 1956

R-101B

MEMORANDUM FOR: THE RECORD

SUBJECT: Training at [redacted] on Infrared Communications Equipment, Model B (IS-1) 25X1

1. Time and Place of Training: 14-25 May 1956, [redacted] 25X1
[redacted] 25X1

2. Attendance: [redacted] 25X1

3. Discussion:

a. Training was conducted as per the attached schedule. (Note penned date changes). Each subject was adequately covered. The field demonstration was not impressive. In the afternoon, difficulty was encountered in maintaining $4\frac{1}{2}$ miles. The evening demonstration was abandoned at $4\frac{1}{2}$ miles after one hour of unsuccessful endeavor. Range was decreased to approximately 2 miles and contact was established within 5 minutes. However, at this time, battery failure stopped the demonstration. The reasons for the poor showing at the demonstration are as follows:

1. One equipment had been subjected to vibrational and environmental testing and was not in a good state of repair.

2. The IR viewer was missing from this piece of gear.

3. The Boone-scope was missing from this piece of gear.

4. Battery failure was due to using an old battery that had been subjected to vibrational testing.

5. Weather conditions were not ideal. Visibility was excellent although much shimmer caused by convection currents was apparent to even the naked eye.

[redacted] 25X1

b. It is the opinion

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b. It is the opinion of the writer that 8 days would have been entirely adequate for this training.

c. The information gained from this instruction should permit the student to perform any maintenance and operation required provided suitable tools are at hand.

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TSS/APD

Distribution:
Orig. - P-101B
1 - RTW
1 - Chrono

TSS/APD/RTW/bb (1 June 56)

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TASK ORDER NO. 4

27 March 1956

TRAINING SCHEDULE

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1st day - PM

I. Description and General Theory of Operation

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A. Development

1. Sources - cesium vapor, concentrated arc (xenon, zirconium), filament type

2. Modulation methods - modulation of arcs, Kerr cell, Lichtsprecher

2nd day - AM

3. Detectors - photo conductive cells; PbS, PbT, PbSe, photo multipliers, bolometers

PM

4. Mirrors - Fresnel lens, mangin, parabolic

5. Power Sources - mercury cells, engine generator, storage batteries

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3rd day - AM

Equipment Description

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1. Optical System - beam width, PbS cell, transfer mirror, range

PM

2. Modulator

3. Infrared Viewer - image converter, high voltage supply, construction

4th day - AM

4. Amplifier and Power Supply - response, cell bias, limiter

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PM

5. Battery Charger - cutoff

6. Miscellaneous - telescope, batteries

5th day - AM

II. Equipment Operation

A. Laboratory Discussion

1. Locating the equipment - operating limitations; effects of atmospherics, noise, absorption, sunlight, minimum operating temperature

2. Setting up the equipment

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Task Order No. Training Schedule

5th day - PM

3. Find Operation - daytime method, nighttime method

4. General Operation - use of microphone, modulation level, how to annunciate, use of key

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5. Charging batteries

6th day (To be rescheduled for any succeeding day if weather does not permit)

B. Field Demonstration

7th day - AM

III. Maintenance

A. General - lamp life, battery life, cleaning mirror,

B. Trouble shooting - fuses, check modulation, galvanometer, amplifier, viewer

PM

C. Testing - check for galvanometer alignment, lamp alignment, vacuum range test, frequency response, check battery cutoff, individual cell voltage

8th day - AM

D. Replacement of parts - removal of amplifier, lamp, optical plate, objective mirror,

PM

reticle lamps, batteries, galvanometer, viewer, image tube

E. Collimation - how to collimate viewer, telescope

6th day - AM

F. Alignment of optics - receiver-transmitter axis collimation, objective mirror focus, galvanometer and lamp alignment, viewer

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objective and reticle focus

G. Storage - maximum and minimum temperature, batteries

9th day

IV. General Discussion

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